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Detection of DNA depurination with the use of an electrode modified with carbon nanotubes

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Abstract

The possibility of detecting DNA depurination products on a glassy carbon electrode modified with carbon nanotubes (CNTs) was revealed. Adenine and a guanine DNA nucleotide were oxidized at similar potentials of about +1.1 V against Ag/AgCl; this fact did not allow us to detect adenine in the presence of DNA. DNA components did not interfere with the detection of guanine, which was oxidized at +0.9 V. Guanine was strongly adsorbed on the CNT-modified glassy carbon electrode; the oxidation current of guanine was a linear function of the concentration described by the equation i (10-6 A) = 3.21 + 0.44 c (10-6 M), r = 0.963. The results were suitable for the determination of guanine liberated from DNA on the CNT-modified glassy carbon electrode. The procedure developed was applied to evaluate the rates of DNA depurination under various conditions. © 2008 MAIK Nauka.

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